

Remarks

Reconsideration of the subject application is requested in view of the preceding amendments and the following remarks.

The disclosure is objected to because the description of FIG. 3A does not reference item 305 and the description of FIG. 3B does not reference items 303 and 305. The specification is amended to reference items 303 and 305, and FIG. 3A is amended to show items 303 and 305. Withdrawal of this objection is requested.

Claims 1-8, 12-16, 18-21, 23-29, 35, 37-40, and 42-44 stand rejected as allegedly anticipated by Nambu, U.S. Patent 6,136,722. This rejection is traversed. Claims 12-13, 17, 20-29, and 37-40 are canceled without prejudice, and the rejection of these claims is moot. Claim 1 as amended recites a method of anisotropically etching a substrate assembly that comprises forming a resist layer on a surface of the substrate assembly, the resist layer having a thickness and defining patterns in the resist layer by removing portions of the resist layer. The resist layer and the surface of the substrate assembly are exposed to a first plasma etch. A portion of the substrate is etched while the thickness of the resist layer is simultaneously etched. The resist layer and the surface of the substrate assembly are also exposed to a second plasma etch so that a portion of the substrate is etched while the thickness of the resist layer is decreased. Nambu does not teach or suggest such a method. According to Nambu, a fluorocarbon polymer film is deposited on a surface of a masking film during plasma etching. Col. 3, lines 59-64. Nambu does not teach or suggest exposure to a first plasma etch that increase a thickness of a resist layer, and second plasma etch that decreases the thickness of the resist layer. Therefore, claim 1 and dependent claims 2-8 are properly allowable over Nambu.

Claim 14 is amended to recite the features of dependent claim 17, and the rejection of claim 14 and dependent claims 15-16 and 18-19 is moot in view of this amendment. As admitted by the Office action, Nambu does not teach or suggest all the features of claim 17. See Office action, p. 4. Therefore, withdrawal of the rejection of claims 14-16 and 18-19 as anticipated by Nambu is requested.

Claim 35 recites a method of plasma etching a surface of a substrate assembly having patterns defined by a resist layer. The method comprises several steps including enclosing the substrate assembly in a silicon or silicon carbide enclosure. Nambu does not teach or suggest such a step, and claim 35 is properly allowable over Nambu.

Claim 42 is amended to recite a method that includes exposing a resist layer and the exposed portions of the surface of the substrate assembly to a resist-conserving etch and a resist-consuming etch. Nambu does not teach or suggest such a combination, and claim 42 and dependent claims 43-45 are properly allowable over Nambu.

Claims 17 and 41 stand rejected as allegedly obvious from a combination of Nambu and Trapp et al., U.S. Patent 6,451,705 ("Trapp"). This rejection is traversed. Trapp has an August 31, 2000 filing date while the present application is a division of Application No. 09/342,677, filed June 29, 1999. Therefore, Trapp is not prior art with respect to the present application, and withdrawal of this rejection and all other rejections based on Trapp is requested. Claim 17 is canceled without prejudice, but claim 12 is amended to include the features of claim 17. Therefore, claims 12-16 and 18-19 are properly allowable.

Claim 36 stands rejected as allegedly obvious from a combination of Nambu, Trapp, and Nulty, U.S. Patent 5,562,801. This rejection is traversed. As noted above, Trapp is not prior art

with respect to the present application, and withdrawal of all rejections based on Trapp is requested.

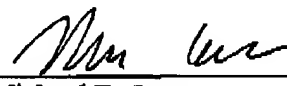
New claim 46 is submitted for consideration. Claim 46 recites a method of anisotropically etching a substrate assembly that comprises forming a resist layer on a surface of the substrate assembly, and defining patterns in the resist layer by removing portions of the resist layer. The resist layer and the surface of the substrate assembly are exposed to a plasma generated in a gas mixture consisting essentially of a chlorinated hydrocarbon gas. A portion of the substrate exposed by the step of removing portions of the resist layer is etched while a thickness of the resist layer is increased. Nambu fails to teach or suggest such a method. Nambu discloses fluorocarbon-based etching gases and is silent concerning chlorinated etching gases. Accordingly, claim 46 is properly allowable.

In view of the preceding amendments and remarks, all pending claims are in condition for allowance, and action to such end is requested.

Respectfully submitted,

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APPENDIX

Donohoe et al.
Title: ETCHING METHODS AND APPARATUS AND
SUBSTRATE ASSEMBLIES PRODUCED
THEREWITH

Application No. 09/916,734
Filed: July 26, 2001
Attorney Reference No. 6047-59153

FIG. 1A

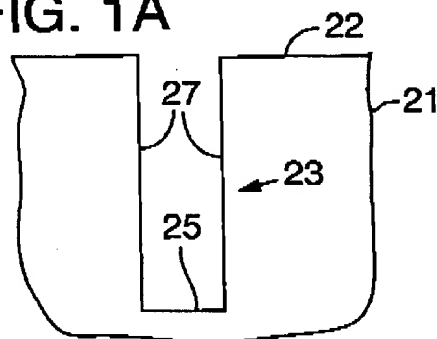


FIG. 1B

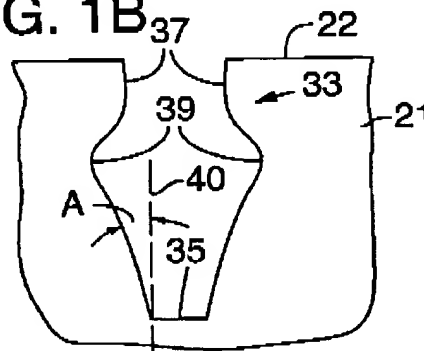


FIG. 1C

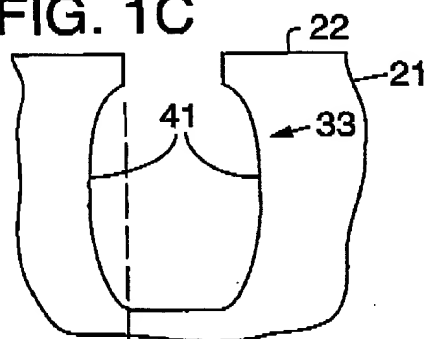


FIG. 1D

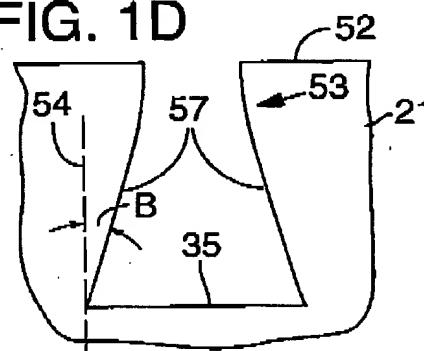


FIG. 3A

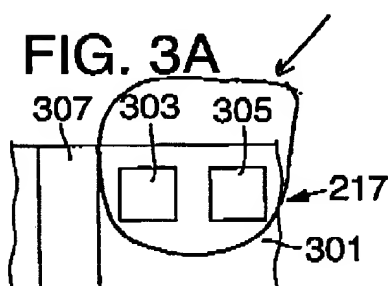


FIG. 3B

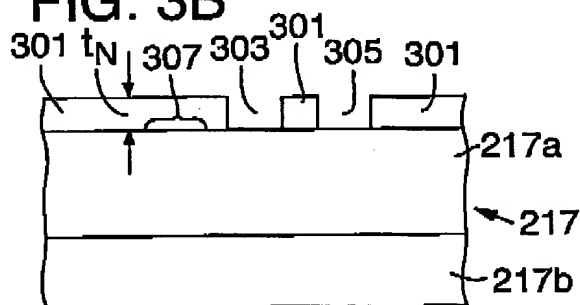
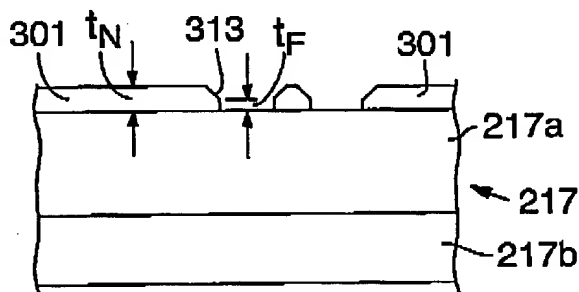


FIG. 3C



Donohoe et al.
Title: ETCHING METHODS AND APPARATUS AND
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Application No. 09/916,734

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FIG. 1A

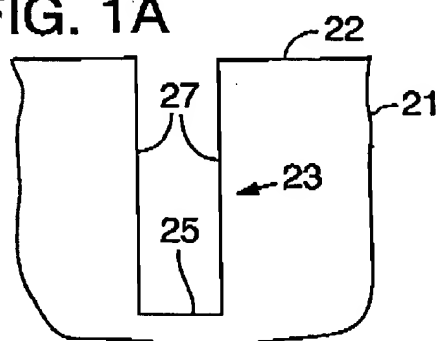


FIG. 1B

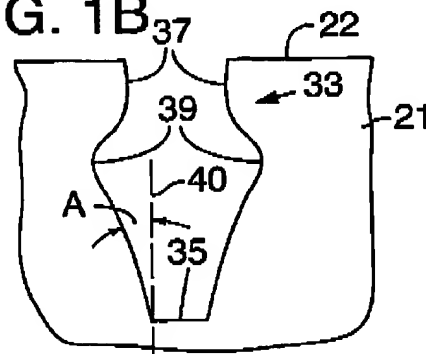


FIG. 1C

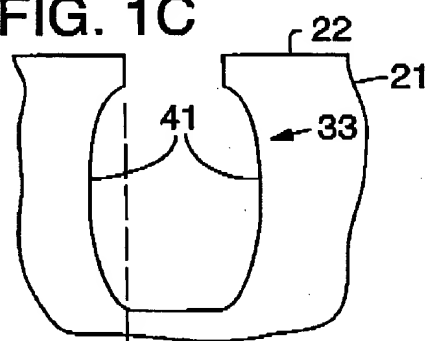


FIG. 1D

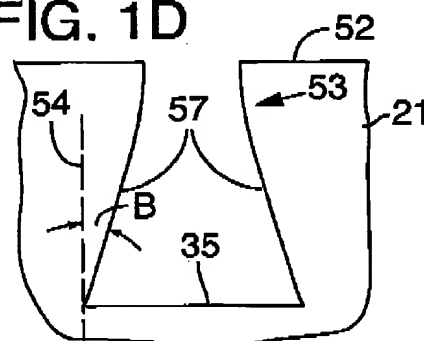


FIG. 3A

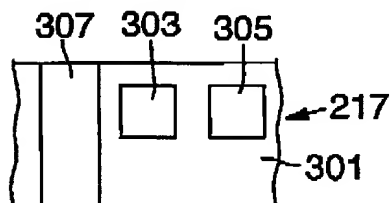


FIG. 3B

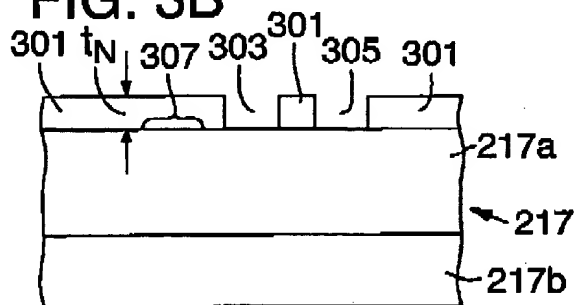


FIG. 3C

